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LAW OFFICES OF JONATHAN ALAN QUINE

By

Tracie Brooks
Tracie Brooks

Attorney Docket No. 02-031910US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Juha Punnonen, et al.

Application No.: 09/886,942

Filed: June 21, 2001

For: NOVEL CHIMERIC PROMOTERS

Examiner: Unassigned

Art Unit: 1645

LETTER TO OFFICIAL DRAFTSPERSON

Attn: Box Missing Parts
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

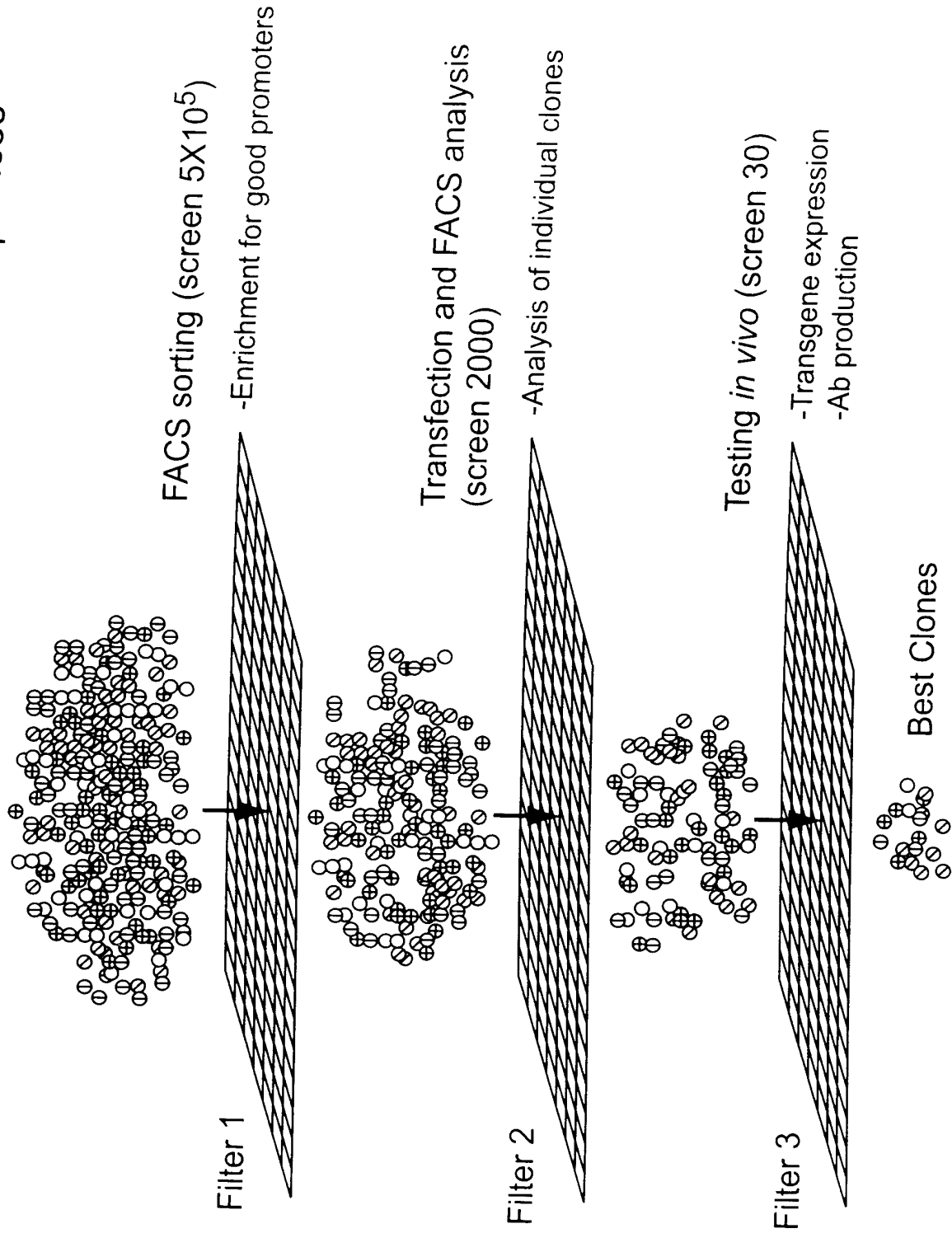
Applicant hereby submits 23 sheets of formal drawings to be made of record in the above-identified case.

Respectfully submitted,

Emily M. Haliday
Emily M. Haliday, J.D., Ph.D.
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Figure 1: Screening libraries of chimeric promoter sequences



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Figure 2: Enrichment of chimeric promoter libraries by FACS sorting

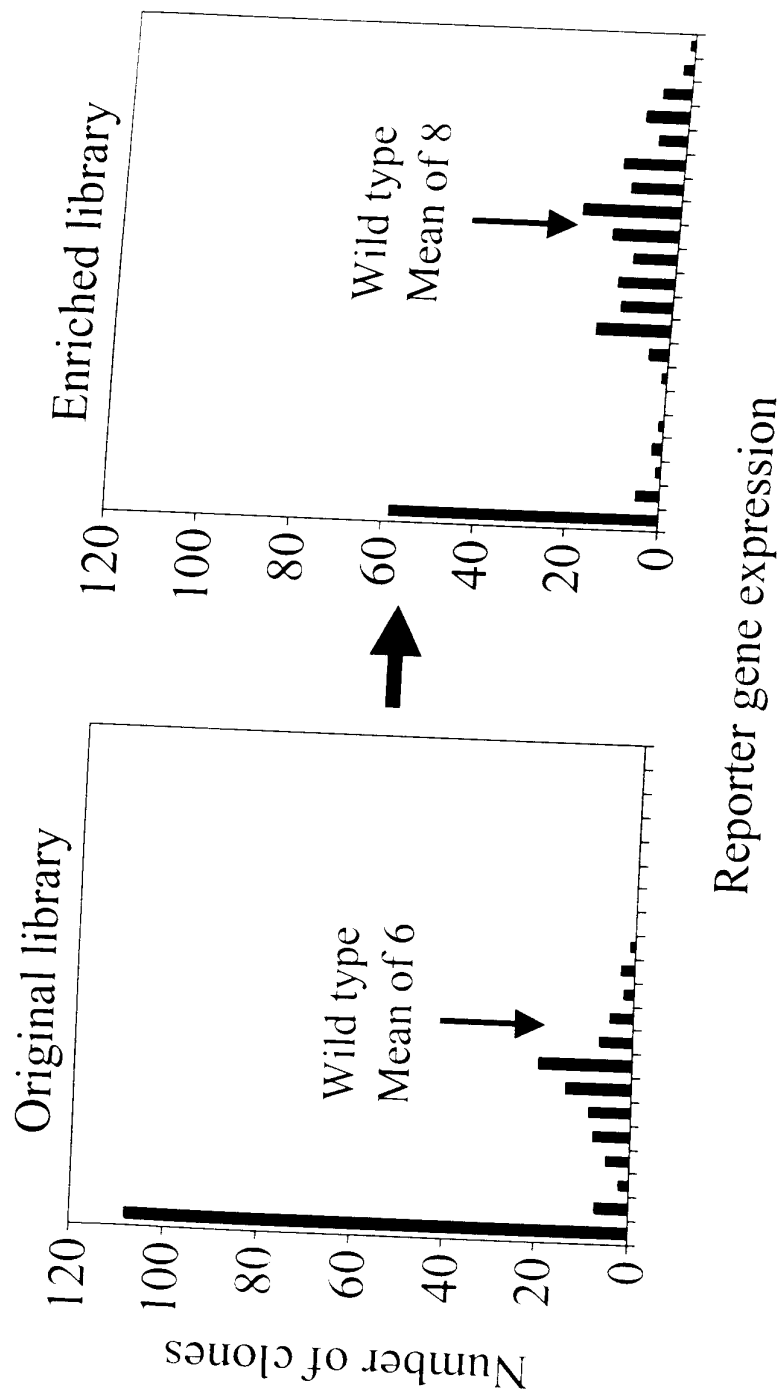


Figure 3: Diverse activities of chimeric promoter sequences in transfected cells

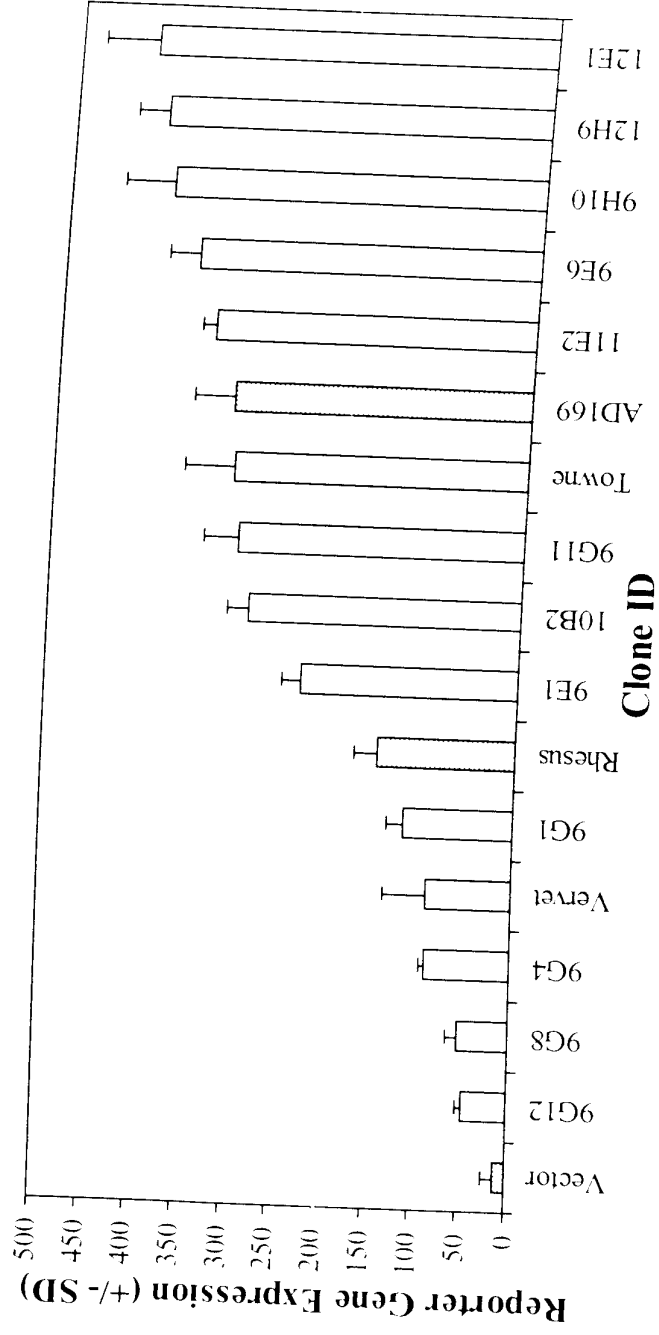
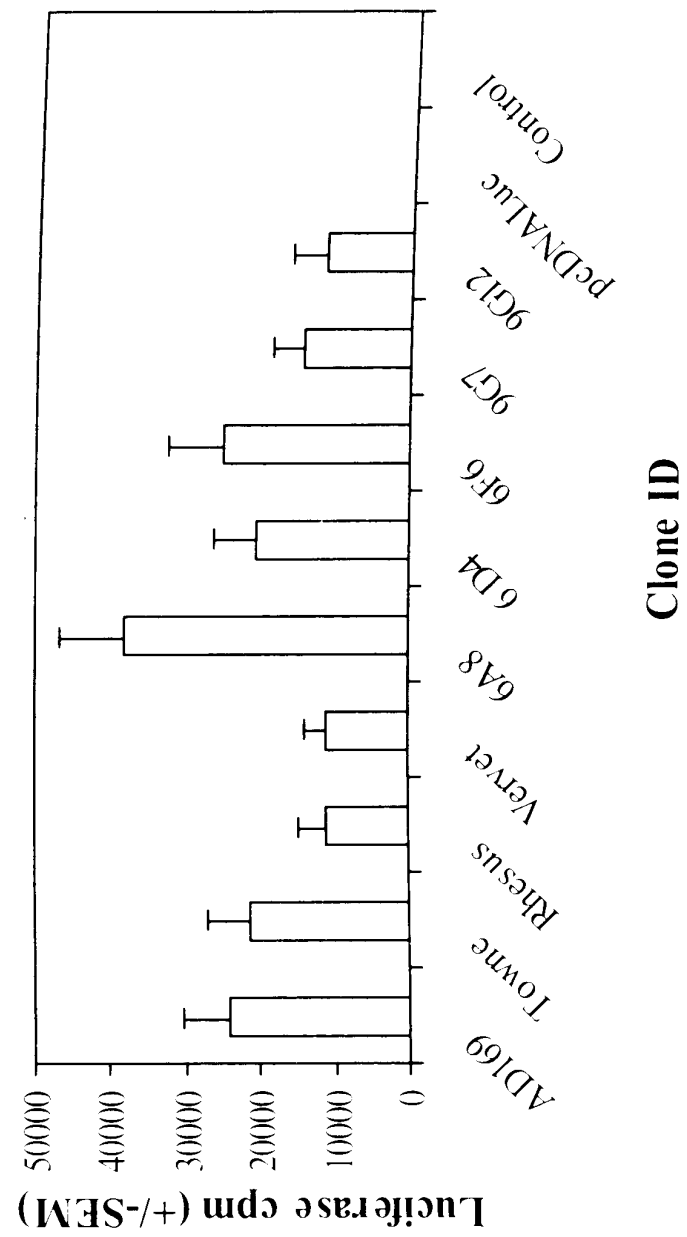


Figure 4: Luciferase expression in muscle 7 days after plasmid injection



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Figure 5: Comparison of Luciferase expression from clone 6A8 and parental clones

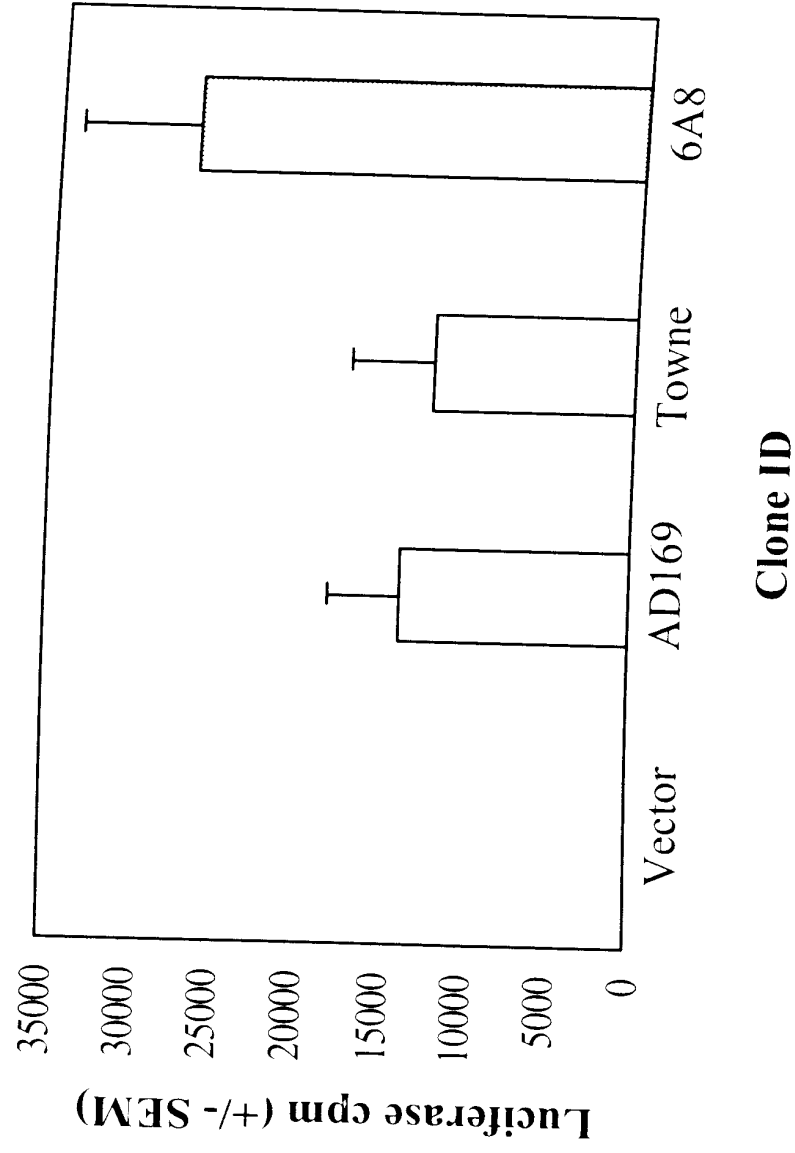
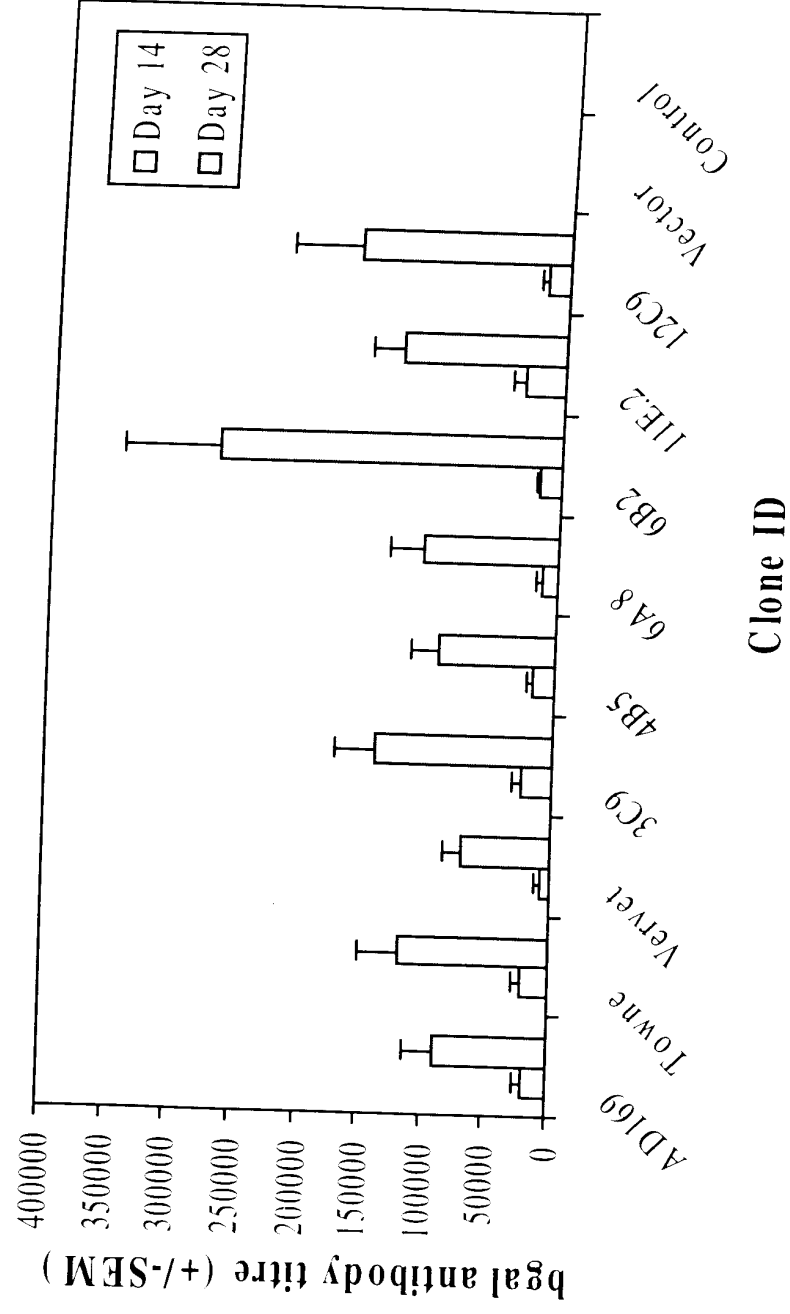


Figure 6A: Antibody responses following injection with β -galactosidase-encoding plasmid



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Figure 6B: Improved Ab Response by Shuffled Promoter

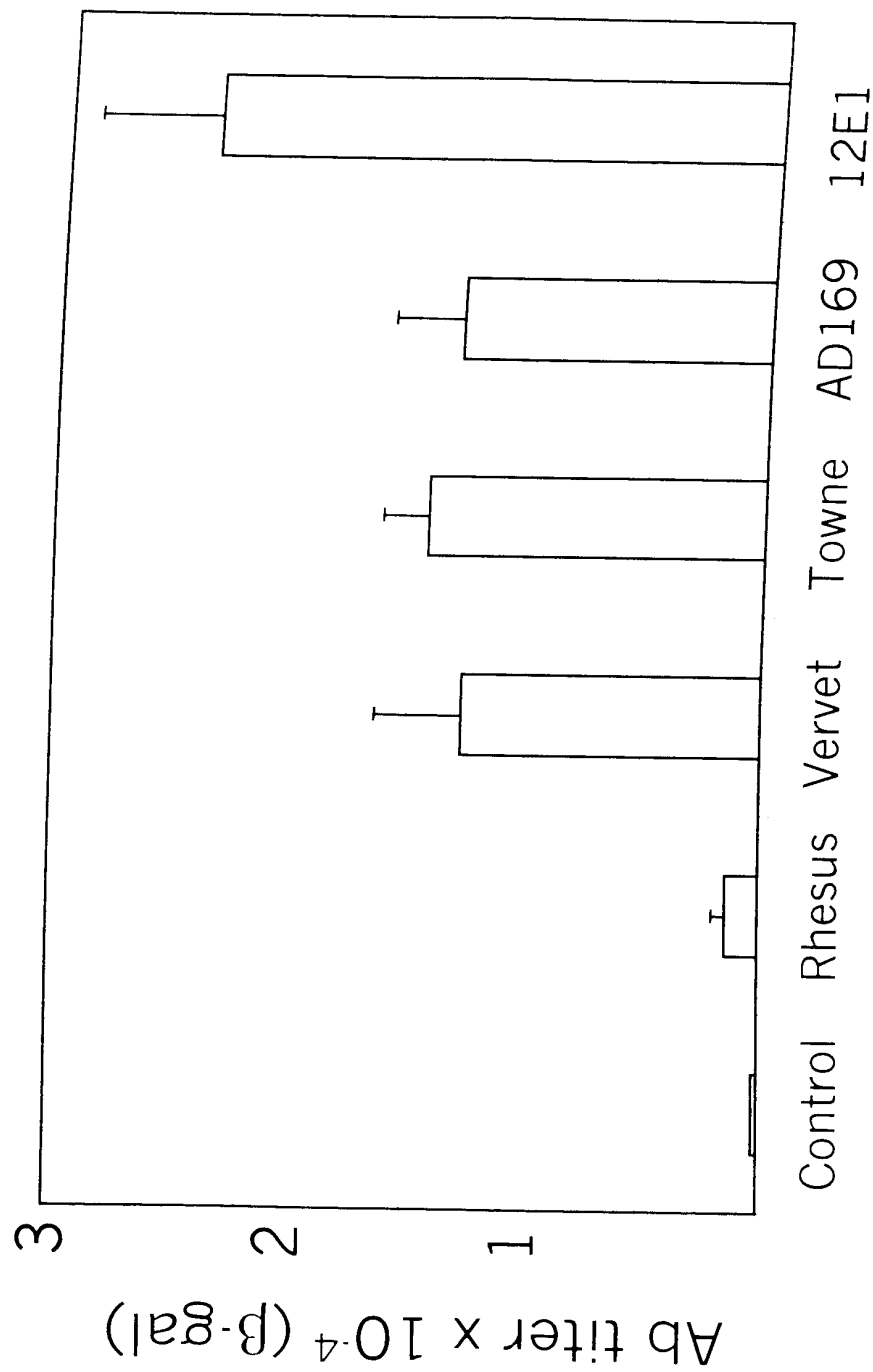


Figure 7: Chimeric promoter 6A8 is functional in human muscle tissue

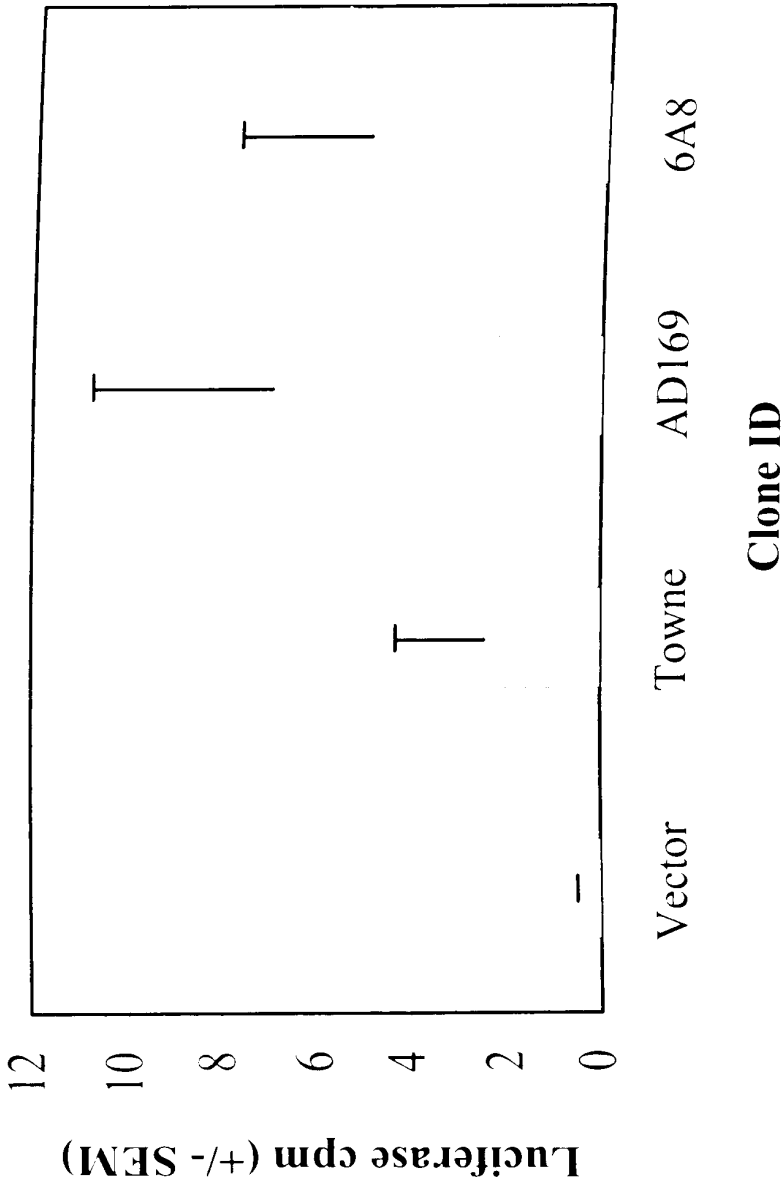


Figure 8A: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATACATTAAATCAATATTGGCAATTAGCCATATTG	1
11B2	(1)	ATATGAGGCTATATCGCCGATATAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	100
12C9	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
12E1	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
12H9	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
3C9	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
4B5	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
6A8	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
6B2	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
6D4	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
6F6	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9E1	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9F11	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9G11	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9G12	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9G4	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9G7	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
9G8	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
AD169	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
Towne	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
Consensus	(1)	ATATGAGGCTATATCGCCGATAGAGCGGACATCAAGCTGGCACATGGCCAAATGCATATCGATCTATAGTTGAATCAATATTGGCAATTAGCCATATTG	
10B2	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	200
11B2	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
12C9	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
12E1	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
12H9	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
3C9	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
4B5	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
6A8	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
6B2	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
6D4	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
6F6	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9E1	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9F11	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9G11	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9G12	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9G4	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9G7	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
9G8	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
AD169	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
Towne	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	
Consensus	(101)	TCATTGGTTATATAGCATAAATCAATATTGGCTATTGGCCATTGACATCGTTGATCTATATCATATATGTACATTTATATTGGCTCATGTCCCAATAG	

Figure 8B: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(201)	ACGCGCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTAATAA	300
11E2	(201)	ACTGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTAATAA	
12C9	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
12E1	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
12H9	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
3C9	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
4B5	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
6A8	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
6B2	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
6D4	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
6F6	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9E1	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9F11	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9F12	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9G4	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9G7	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
9G8	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
AD169	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
Towne	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
Rhesus	(201)	ACCGCCATGTTGACATTGATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAGCCCATATATGGAGTCCGGGTTACATAA	
406	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
11E2	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
12C9	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
12E1	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
12H9	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
3C9	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
4B5	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
6A8	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
6B2	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
6D4	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
6F6	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9E1	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9F11	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9F12	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9G4	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9G7	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
9G8	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
AD169	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
Towne	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	
Rhesus	(301)	ACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCGCCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAAGGA	

Figure 8C: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(401)	GACCTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	500
11E2	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCTCACTTGGCAGTACATCAAGTGATCATATGCCAAGTACG-CCCCCTATTGACGTCAATGACGGTA	
12C9	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
12E1	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
12H9	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
3C9	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
4B5	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
6A8	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
6B2	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
6D4	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
6F6	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9E1	(319)	-----	
9F11	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9G11	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9G12	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9G4	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9G7	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
9G8	(401)	GACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTCGG-CCCCCTATTGACGTCAATGACGGTA	
AD169			
Towne			
consensus			
10B2	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGGCTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	600
11E2	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGTAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
12C9	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
12E1	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
12H9	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
3C9	(501)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
4B5	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
6A8	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
6B2	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
6D4	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
6F6	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9E1	(319)	-----GGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9F11	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9G11	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9G12	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9G4	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9G7	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
9G8	(500)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	
AD169			
Towne			
consensus	(501)	AATGGCCCGCCTGGCATTATGCCCACTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGCTGATGCG	

Figure 8D: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	700
11E2	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
12C9	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
12E1	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
12H9	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
3C9	(601)	GTTTTGGCGGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
4B5	(600)	GTTTTGGCAGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
6A8	(600)	GTTTTGGCAGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
6B2	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
6D4	(600)	GTTTTGGCAGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
6F6	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9E1	(407)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9F11	(600)	GTTTTGGCAGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9G11	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9G12	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9G4	(600)	GTTTTGGCGGTACATCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9G7	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
9G8	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
AD169	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
Towne	(600)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
Rhesus	(601)	GTTTTGGCAGTACACCAATGGCGTGATAGCGGTTTGACTCAGGGGATTTCCAAGTCTCCACCCATTGACGTCGAATGGAGTTGTTTGGTACCAA	
10B2	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	800
11E2	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
12C9	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
12E1	(683)	-----CGGTCTATGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
12H9	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
3C9	(701)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
4B5	(700)	-----CGGTCTATGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
6A8	(683)	-----CGGTCTATGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
6B2	(683)	-----CGGTCTATGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
6D4	(683)	-----CGGTCTATGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
6F6	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9E1	(507)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9F11	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9G11	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9G12	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9G4	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9G7	(700)	AGTCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
9G8	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
AD169	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
Towne	(700)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	
Rhesus	(701)	AATCAACGGGACCTTCCAAAATGTCTGTAATAACCCCGCCCGTTGACGCAATGGGCGGTAGGCGTGACGGTGGGAGGTCCTATATAAACAATGTCGTT	

Figure 8E: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(10B2)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	900
11E2	(800)	TAGTGAACCGCATTTCTGCTGGGACGC-----CGGAG---GAGCTCCATGGAAGAGACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
12C9	(800)	TAGTGAACCGCATTTCTGCTGGGACGC-----CGGAG---GAGCACCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
12E1	(748)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
12H9	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
3C9	(801)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
4B5	(748)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
6A8	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
6B2	(748)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
6D4	(748)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
6F6	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9E1	(607)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGTACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9F11	(799)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9G11	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9G12	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9G4	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9G7	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
9G8	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGTACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
AD169	(799)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
Towne	(800)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	
consensus	(801)	TAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTGACCTCCAT-AGAAGACACCGGGACCGATCCAGCCTCCGCGCCGGGAAACGTTGCA	901
10B2	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	1000
11E2	(890)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
12C9	(889)	TTGGAACGC-----	
12E1	(847)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
12H9	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
3C9	(900)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
4B5	(847)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
6A8	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
6B2	(847)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
6D4	(847)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
6F6	(889)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9E1	(706)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9F11	(898)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9G11	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9G12	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9G4	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9G7	(889)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
9G8	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
AD169	(898)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
Towne	(899)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	
consensus	(901)	TTGGAACCGGGATTCCCGGTGCCAAGAGTGACGTAAGTACCGCTATAGACTCTATAGGCACACCCCTTTGGCT-CTTATGCATGCTATACGTGTTTTTGG	

1001

[illegible]

Figure 8G: Comparison of 18 chimeric promoter sequences generated by DNA shuffling using CMV promoter nucleic acid sequences from AD169 and Towne human strains and Rhesus and Vervet monkey strains as parental sequences.

10B2	(1198)	1201	1490
10B2	(1198)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACACACCGTCCCGAGTCCCGCGGAGTTTGTAAACATAGCGTGG	1490
11E2	(1189)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGGTGCCCGAGTTTATTTAAACATAGCGTGG	1490
12C9	(898)	-----	-----
12E1	(1147)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCGTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
12H9	(1198)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
3C9	(1199)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
4B5	(1146)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
6B8	(1198)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
6A2	(1146)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
6D4	(1146)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
6P6	(1188)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9E1	(1005)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
5F11	(1196)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9G11	(1198)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9G12	(1198)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9G4	(1198)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9G7	(1188)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
9G8	(1198)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
AD169	(1198)	TCGTGATATTTTACAGGATGGGTCTCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
Towne	(1197)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
Consensus	(1201)	TCGTGATATTTTACAGGATGGGTCCCATTTATTTATTTACAAATTCACATATACAAACACCGCTCCCGTCCCGTCCCGAGTTTATTTAAACATAGCGTGG	1490
10H2	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGCGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
11E2	(1289)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
12C9	(898)	-----	-----
12E1	(1247)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGCGGTGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
12H9	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGTGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
3C9	(1299)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
4B5	(1246)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
6A8	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGTGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
6B2	(1246)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
6D4	(1246)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
6F6	(1288)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9E1	(1105)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9F11	(1296)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9G11	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9G12	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9G4	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9G7	(1288)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
9G8	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
AD169	(1298)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
Towne	(1297)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490
Consensus	(1301)	GATCTCCACGCGAAATCTCGGGTACGTGTCCGGACATGGGCTCTTCTCCGGTAGGGCGGAGCTTCCACATCCGAGCCCTGGTCCCATGCTCCACGCGG	1490

10B2	110B2	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1501
11E2	11E2	(1389)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1502
12C9	12C9	(898)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1503
12E1	12E1	(1347)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1504
12H9	12H9	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1505
3C9	3C9	(1399)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1506
4B5	4B5	(1346)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1507
6A8	6A8	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1508
6P2	6P2	(1346)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1509
6D4	6D4	(1346)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1510
6F6	6F6	(1388)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1511
9E1	9E1	(1205)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1512
9F11	9F11	(1396)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1513
9G11	9G11	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1514
9G12	9G12	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1515
9G4	9G4	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1516
9G7	9G7	(1388)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1517
9G8	9G8	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1518
Ad169	Ad169	(1398)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1519
Towne	Towne	(1397)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1520
Consensus	Consensus	(1401)	TCATGGTCGCTCGGCAGCTCCTTGCTCCTTAACAGTGGAGGCCAGACTTATGACAGCAGCAATGCCACCACCAACCCAGTGTGCCGACAAAGAGCCCGTGGCGG	1521
10B2	10B2	(1498)	TAGGATATGTTCTGAAAATGAGCTCGAGATTGGGCTCGCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1601
11E2	11E2	(1489)	TAGGATATGTTCTGAAAATGAGCTCGAGATTGGGCTCGCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1602
12C9	12C9	(898)	TAGGATATGTTCTGAAAATGAGCTCGAGATTGGGCTCGCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1603
12E1	12E1	(1447)	TAGGATATGTTCTGAAAATGAGCTCGAGATTGGGCTCGCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1604
12H9	12H9	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATGCGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1605
3C9	3C9	(1499)	TAGGATATGTTCTGAAAATGAGCTCGG - AGTGGGCTTGACCGCTGACGCTATTTGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1606
4B5	4B5	(1446)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1607
6A8	6A8	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1608
6B2	6B2	(1446)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1609
6D4	6D4	(1446)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1610
6F6	6F6	(1488)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1611
9E1	9E1	(1305)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1612
9F11	9F11	(1496)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1613
9G11	9G11	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1614
9G12	9G12	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1615
9G4	9G4	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1616
9G7	9G7	(1488)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1617
9G8	9G8	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1618
Ad169	Ad169	(1498)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCGCTGACGCGAGATGGAAGACTTAAAGGACGGCGCAAGAAAGATGCAAGCTGAGT	1619
Towne	Towne	(1497)	TAGGATATGTTCTGAAAATGAGCTCGGAGATTGGGCTTGCCACCG - TGACGCGAGATTGGGCTTGCCACCG - TGACGCGAGATTGGGCTTGCCACCG - TGACGCG	

1601

10B2 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 11E2 (1589) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 12C9 (898) -----
 12E1 (1547) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 12H9 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 3C9 (1597) TGTTGTTGTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 4B5 (1546) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 6A8 (1598) TGTTGTTGTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 6B2 (1546) TGTTGTTGTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 6D4 (1546) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 6F6 (1588) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9E1 (1405) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9F11 (1596) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9G11 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9G12 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9G4 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9G7 (1588) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 9G8 (1598) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 AD169 (1598) TGTTGTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 Towne (1596) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 consenus (1601) TGTTGATTTCTGATAAGAGTCAGAGGTAACCTCCCGTTGCGGTGCTGTTAAACCGTGGAGGGCAGTGTAGTCTGAGCAGTACTCGTTGCTGCCCGCGCGCGC
 1701
 10B2 (1598) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 11E2 (1689) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 12C9 (898) -----
 12E1 (1647) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 12H9 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 3C9 (1697) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 4B5 (1646) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 6A8 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 6B2 (1646) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 6D4 (1646) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 6F6 (1688) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9E1 (1505) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9F11 (1696) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9G11 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9G12 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9G4 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9G7 (1688) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 9G8 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 AD169 (1698) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 Towne (1696) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT
 consenus (1701) ACCAGACATAATAGCTGACAGACTAACAGACTGTTCTCTTCCATGGGTCTTTTCTGCAGTCAACCGTCCCTT

18/23

Vector for promoter evolution

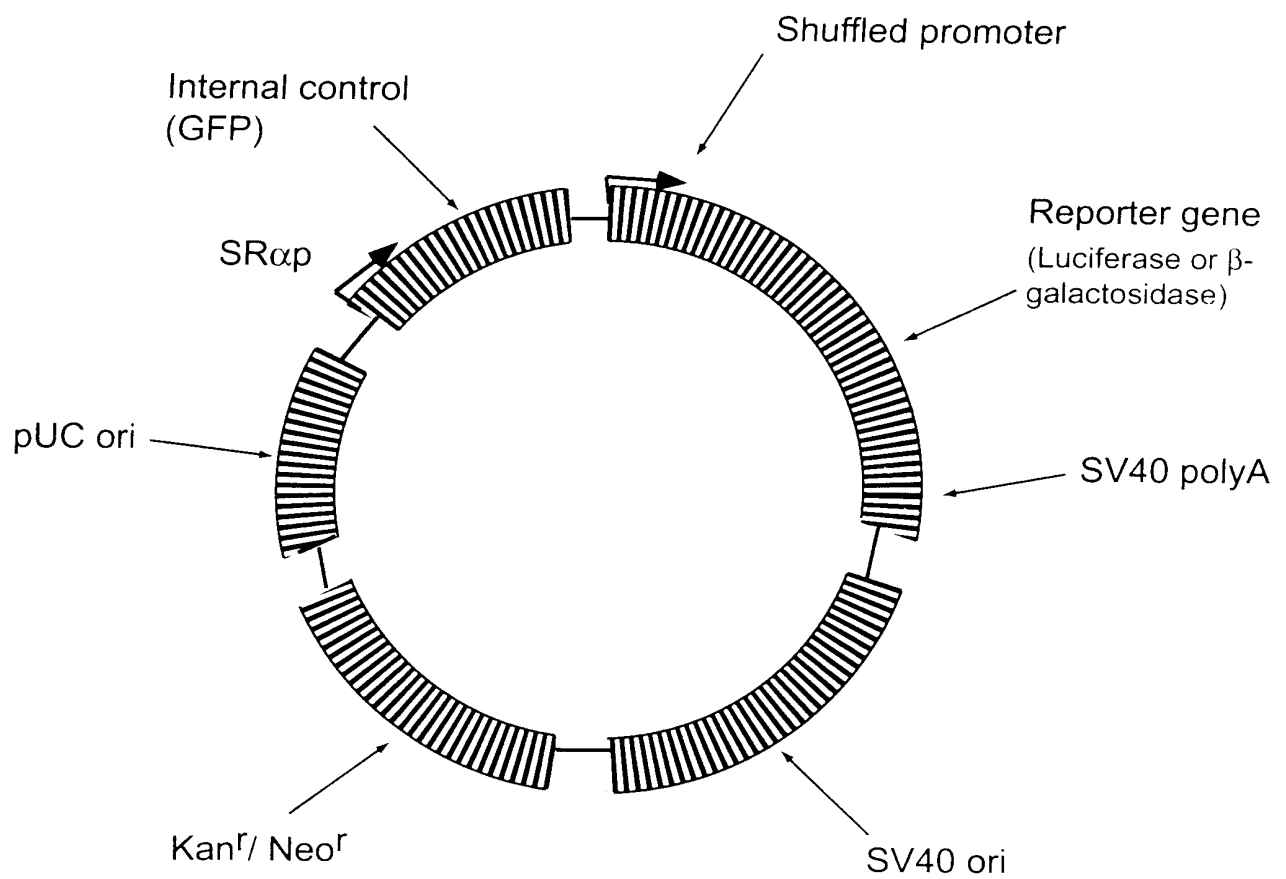


Fig. 9

Figure 10A

Towne_promoter_fr_PCR_prod_seq	1	ATA.....TGAGGCTATATCGCCGATAGAGCGACATCAAGCTGGCACATGGCCAATGCAT	60
Rhesus_monkey_PCR_prod_821bp		ACT.....TGGCACGGTGCCAA.GTTTGGGGCGGGTC...TTGGCACCGTGCCAA.....	
Vervet_(Simian)_PCR_product_seq		ATTGAATTGGCATGGTGCCCAATAATGGCGGC..CATA...TTGGCTATATGCCA.....	
	61		
Towne_promoter_fr_PCR_prod_seq	120	ATCGATCTATACATTGAATCAATATTGGCAATTAGCCATATTAGTCATTGGTTATATAGC	120
Rhesus_monkey_PCR_prod_821bp		...GTCCGCCCATATTGGTTGGCAT.....ATGTCCAATATTATTGAT...CCATATAGC	
Vervet_(Simian)_PCR_product_seq	GGATCAATAT.....ATAGGCAATATC.....CAATTTGGC	
	121		
Towne_promoter_fr_PCR_prod_seq	180	ATAAATCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATATAATGTACAT	180
Rhesus_monkey_PCR_prod_821bp		CAATATCCAATATGGCTAATAGCCA.....GGTTCAATAGAAATGGCCAATAAGC	
Vervet_(Simian)_PCR_product_seq		CCTATGCCAATATGGCTATTGGCCA.....GGTTCAATACTATGTATTGGCCCT	
	181		
Towne_promoter_fr_PCR_prod_seq	240	TTATATTGGCTCATGTCCAATATGACCGCCCATGTTGACATTGATTATCACTAGTT...AT	240
Rhesus_monkey_PCR_prod_821bp		CAATAT..GCCATTGGCCCAACATGGCAA.TGGGCCAGTATTGATTATAGCCAATAT...AT	
Vervet_(Simian)_PCR_product_seq		ATGCCA..TATAGTATCCCATATATGGGTTTCCTATTGACGTAGATAGCCCTCCCAAT	

Figure 10B

Towne_promoter_fr_PCR_prod_seq	241	TAATAGTA.....ATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGC	300
Rhesus_monkey_PCR_prod_821bp		AGGCAATA.....ATCCATATTGG...CATATGTCCATATTGCCATATAGCCCATATTGGC	
Vervet_(Simian)_PCR_product_seq		GGGCGGTCCCATATACCATATATGG...GGCTTCCTAATACCGCCCATAGCCACTCCCCC	
Towne_promoter_fr_PCR_prod_seq	301	GT...T..ACATAACTTACGGTAAATGGCCCGCCTCGTGACCGCCCAACGACCCCCGCCC	360
Rhesus_monkey_PCR_prod_821bp		TTATGT..CCATTACCAATACCATATATGGGTCTTCCTATATACGTACATAGGTACCGCCC	
Vervet_(Simian)_PCR_product_seq		AT...TGACGTCAATGGTCTCTATATATGGTCTTTCCTATTGACGTCAATGGGCGGTCC	
Towne_promoter_fr_PCR_prod_seq	361	.ATTGACGT.....	420
Rhesus_monkey_PCR_prod_821bp		.ATTGACGTAATATGGATACGCCTCCATTGACGTCAATGGGAGGGATTAAATATACGTAC	CAA
Vervet_(Simian)_PCR_product_seq		TATTGACGTA..TATGGCGCCTCCCCCATTGACGTCAATTACGGTAAATGGCCCGCCTGGC	
Towne_promoter_fr_PCR_prod_seq	421	TAATGACGTATGTTCCCAT.....AGTAACGCCAATAGGG..ACTTTTCCA	480
Rhesus_monkey_PCR_prod_821bp		TAATACCGCCCATTGACGTGTATAGGACCGTCCCATTTGACGTCAATAGGCCCACTCCCA	
Vervet_(Simian)_PCR_product_seq		T..CAATGCCCCATTGACGT.....CAATAGGACCACCCACCA	

Figure 10C

Towne_promoter_fr_PCR_prod_seq	481	TTGACGTCAATGGGTGGAGTATTACGGTAAACTGCCCACTT.....GGCAGTAC	540
Rhesus_monkey_PCR_prod_821bp		TTGACGTCAATGGG.....GTGGCCCATTTGCCCATTC.....	
Vervet_(Simian)_PCR_product_seq		TTGACGTCAATGGG.....ATGGCTCATTTGCCCATTCATATCCGTTC.....	
Towne_promoter_fr_PCR_prod_seq	541	ATCAAGTGTATCATATGCCAAGTCCGGCCCCCTATTGACGTCAATGACGGTAAATGGCCC	600
Rhesus_monkey_PCR_prod_821bp	CCACGCCCCCTATTGACGTCAATGACGGTAAATGGCC.	
Vervet_(Simian)_PCR_product_seq	TCACGCCCCCTATTGACGTCAATGACGGTAAATGGCC.	
Towne_promoter_fr_PCR_prod_seq	601	GCCTGGCATTATGCCCCAGTACATGACCTTAGGGACTTTCCTACTTGGCAGTACATC..T	660
Rhesus_monkey_PCR_prod_821bp	CACTTGGCAGTACATCAAT	
Vervet_(Simian)_PCR_product_seq	CACTTGGCAGTACATCAAT	
Towne_promoter_fr_PCR_prod_seq	661	ACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTGGCAGTACACCAA.....	720
Rhesus_monkey_PCR_prod_821bp		ACCTATTAATAGTAACT..TGGCAAGTAAATGGGTACTTGGCAGTACACCAAGG.TACAT	
Vervet_(Simian)_PCR_product_seq		ATCTATTAATAGTAACT..TGGCAAGTACATTACTATTGGCAAGTACGCCAAGGGGTACAT	

Figure 10D

Towne_promoter_fr_PCR_prod_seq	721TGGGCGTGGATAGCGGT..TTGACTCACGGGGATTCCAAAGTCTC	780
Rhesus_monkey_PCR_prod_821bp		TGGCAG.TACTCCCATTGACGTCAATGGCGGTAAATGGCCCGCAATGGCTGCCAAGTACA	
Vervet_(Simian)_PCR_product_seq		TGGCAGGTACTCCCATTTGACGTCAATGGCGGTAAATGGCCCGCATGGCTGCCAAGTACA	
Towne_promoter_fr_PCR_prod_seq	781	...CACCCCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCA	840
Rhesus_monkey_PCR_prod_821bp		...TGCCC.ATTGACGTCAATGGGG.....	
Vervet_(Simian)_PCR_product_seq		ACATCCCC.ATTGACGTCAATGGGAA.....	
Towne_promoter_fr_PCR_prod_seq	841	AAATGTCGTAATAACCCCGCCCGTTTGACGCAGCAAAATGGGCG.....	900
Rhesus_monkey_PCR_prod_821bp	CGGTCCCTATGACGTCAATGGGCG.....	
Vervet_(Simian)_PCR_product_seq	GGGGCAATGACGCAGCAAAATGGGCGTTCCATTGACGTAAATGGCG	
Towne_promoter_fr_PCR_prod_seq	901	GTAGGCGGTGACGGTGGGAGGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCG	960
Rhesus_monkey_PCR_prod_821bp		GTAGGCGTGC.CTATGGGCGGTCTATATAAGCAATGCACGTTTAGGGAACCGCCATTCTG	
Vervet_(Simian)_PCR_product_seq		GTAGGCGTGCCTAATGGGAGGTCTATATAAGCAATGCTCGTTTAGGGAACCGCCATTCTG	

Figure 10E

Towne_promoter_fr_PCR_prod_seq	961	CCTGGAGACGCCATCCAGCTGTTTGTGACCTCCAT.AGAAGACACCGGG.ACCGATCCAG	1020
Rhesus_monkey_PCR_prod_821bp		CCTGGGACGTCG.....GAGGAGCACCAT.AGAAGTACCGGGGACCGATCCAG	
Vervet_(Simian)_PCR_product_seq		CCTGGGACGTCG.....GAGGAGCTCCATTGGAAGAGACCGGG.ACCGATCCAG	
Towne_promoter_fr_PCR_prod_seq	1021	CCTCCGGCGCGGGAACGGTGCAATTGGAACGCGGATT	1057
Rhesus_monkey_PCR_prod_821bp		CCTCCATAGCGGGAAGGGTGCAATTGGAACGCGGATA	SEQ ID NO:20
Vervet_(Simian)_PCR_product_seq		CCTCCATAGCGGGGACGGTGCAATTGGAATGCGGATA	SEQ ID NO:22
			SEQ ID NO:23